



## Stroke 2

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WFN15-0486

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### Neutrophil to lymphocyte ratio and early clinical outcome in patients with acute ischemic stroke

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**Background:** The neutrophil to lymphocyte ratio (NLR), representing change in inflammatory cell subpopulation, is closely linked to mortality in patients with cardiovascular disease. The prognostic role of NLR in patients with ischemic stroke remains unclear.

**Objective:** We investigated whether NLR was associated with early clinical outcome in patients with acute ischemic stroke.

**Patients and methods:** We collected data of patients with the first-ever acute ischemic stroke within 72 h of onset who were admitted to Royal North Shore Hospital from January 2009 to March 2013. White blood cell counts and peripheral differential counts were measured on admission. Early clinical outcomes were disability at discharge and in-hospital mortality assessed by the modified Rankin scale (mRS). We have obtained local Institutional Review Board approval.

**Results:** Among 1131 patients, 454 patients were included and classified into tertile groups based on NLR on admission. Patients in higher tertiles of NLR were likely to have severe neurologic deficit. Higher NLR tertiles were associated with a significant worse shift in the distribution of mRS scores in the ordinal logistic regression analysis ( $p < 0.0001$  for trend). This association remained significant after adjustment for clinical and laboratory variables including age, sex, hypertension, smoking, stroke severity, and glucose level ( $p = 0.009$  for trend). However, risk of death or major disability (score of 3–6 on mRS) and in-hospital mortality were not different according to NLR tertiles.

**Conclusion:** In patients with acute ischemic stroke, NLR on admission could be used to predict the short-term functional outcome.

doi:10.1016/j.jns.2015.08.332

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WFN15-1115

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### Thrombolysis in small community hospitals: Comparable results?

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0022-510X/\$ – see front matter.

**Background:** Stroke is a leading cause of stroke and disability worldwide.

Recombinant tissue plasminogen activator (rTPA) is licensed for treatment of acute stroke in the early hours after symptoms onset. But its still underutilized.

Small communities and hospitals may benefit from faster access to care. A compact and cohesive stroke team and shorter in hospital distance may result in better symptoms door to door to needle time and therefore in better clinical outcome

**Methods:** We collected data from 334 patients with acute stroke who were treated with rTPA from 2003 to 2013 in two small Italian Hospitals.

The primary endpoint was a modified Rankin scale at discharge of 0–1 favorable outcome at day 90. We will use scale 0–2 for a sensitivity analysis.

Secondary efficacy endpoints will be symptoms to door and door to needle time. Safety endpoints comprise overall mortality and symptomatic intracranial hemorrhage at 90 days.

**Results:** 334 patients, 159 female and 175 male were treated with rTPA. The mean age was  $71.3 \pm 12.4$  with a range from 93 a median score of 90.24 and a median score of 73.5 NIHSS at time 0 =  $13.8 \pm 5.1$ , Rankin at 3 months  $1.7 \pm 1.7$  Fatal hemorrhage 1 (0.3%) These results were comparable to the international SITS Registry for thrombolytic.

**Conclusion:** thrombolytic therapy for acute stroke in small community hospital can result in an outcome comparable to that of larger center.

doi:10.1016/j.jns.2015.08.333

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WFN15-1489

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### Recanalization of chronic neurovascular arterial occlusion with acute clinical deterioration: Endovascular treatment and clinical outcome

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**Purpose:** To evaluate the indications for and results of the endovascular reconstruction of extra- and intracranial arteries after subacute and chronic occlusion.

**Methods and materials:** A retrospective analysis of clinical and angiographic data of 35 patients who underwent this treatment was performed. All endovascular procedures were carried out under general

anaesthesia with dual platelet inhibition. An individual combination of balloon angioplasty and stent deployment was used.

**Results:** A total of 35 patients and 36 occlusions treated between 2007 and 2014 were evaluated. Treatment indications were acute clinical symptoms in 21/35 (60%) patients. Target vessels were ICA (n = 5), MCA (n = 2), VA (n = 13), BA (n = 7) or a combination thereof (n = 9). The attempted vessel reconstruction was achieved in 32/36 (88.8%) procedures. Clinical improvement was confirmed in 30 patients (83.3%), two of them despite failed attempt. At follow-up, permanent neurological deficit was encountered in 16 patients. Four patients died, one as a consequence to the procedure.

**Conclusion:** Haemodynamic compromise of the dependent circulation is a possible reason for the endovascular reconstruction of extra- and intracranial vessels in the status of subacute or chronic occlusion. The procedure can be quite demanding (e.g., for basilar and MCA reconstruction). Long-term dual anti-aggregation, angiographic follow-up and treatment of in-stent re-stenoses are part of the concept. Clinical results reach from considerable improvement to major morbidity and procedural mortality.

doi:10.1016/j.jns.2015.08.334

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WFN15-1500

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**Temporal trends of intravenous thrombolysis in acute ischemic stroke patients at a tertiary care center in northern India**

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**Background:** Acute ischemic stroke (AIS) is chiefly time dependent treatable cause of morbidity and mortality. Despite increasing stroke incidence in developing countries, increasing stroke thrombolysis rates have not been documented.

**Aims:** To determine trends in patient characteristics and rates of tPA use in AIS patients in a tertiary care center in northern India.

**Methods:** All AIS patients presenting within 8 h of symptoms onset from 2010–2014 were enrolled from hospital stroke registry and analyzed for various measures of IV thrombolysis.

**Results:** 608 AIS patients presented within 8 h of symptoms onset. Out of 608 patients, 157 (25.82%) patients received intravenous thrombolysis (IVT) with r-tPA. Patient's onset-to-door time was ≤2 h in 58.60%, ≤3 h in 25.48% and ≤4.5 h in 15.29%. A substantial change in onset-to-door time and IVT was seen over 4 years. IVT rates in ≤2 h of symptom onset increased from 22.2% to 25% and in ≤3 h increased from 38.89% to 43.75%. Door-to-CT time (median 25 versus 14 min, P = 0.027) and door-to-needle time (median 75 versus 62 min, P = 0.011) improved, with 64.5% of tPA-treated patients getting imaged ≤25 min after arrival. Post IVT, hemorrhage was noticed in 17 (10.82%) patients. Median NIHSS at presentation was 12 while favorable mRS (0–2) at 3 months was seen in 48.85%.

**Conclusions:** Encouraging trends of increasing rates of IV tPA use along with improving quality in thrombolysis over the years is seen in a public sector hospital. This may be indicative of increasing use of IV tPA in developing countries like India.

doi:10.1016/j.jns.2015.08.335

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WFN15-1511

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**Cerebrolysin and recovery after stroke (CARS 2): a randomized, placebo-controlled, double-blind, multicenter clinical study**

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**Background:** Cerebrolysin was successful in experimental models of cerebral ischemia and showed beneficial effects in clinical trials in acute stroke; a significant persistent effect was demonstrated in one large prospective, randomized, double-blind multicenter study (CARS 1).

**Objective:** To analyze the efficacy and safety of Cerebrolysin in recovery after stroke in the large prospective, randomized, double-blind, placebo-controlled, multicenter and parallel-group trial; study design was similar to CARS1.

**Patients and methods:** The study compared the effects of 30 ml Cerebrolysin versus placebo during early rehabilitation after stroke. Primary endpoint was the action research arm test (ARAT) score on day 90. Secondary, gait velocity, fine motor function, global neurological status, disability, quality of life, neglect, and depression were evaluated. **Results:** 240 (120 vs. 120) patients were screened, enrolled, randomized, and treated in 15 study centers in Russia. 231 (114 vs. 117) patients completed the study period; only 9 patients discontinued the study prematurely.

Neither the primary ARAT score nor the secondary outcome measures showed a significant treatment difference on day 90; as the mild baseline levels of impairment resulted in good recovery after 90 days also in the placebo.

Evaluation of vital signs and the global assessment of tolerability did not reveal clinically relevant changes both in the study course and between the treatment groups. Laboratory tests and vital signs did not show any abnormalities.

**Conclusion:** This study did not confirm the findings of the study CARS1, which showed a large effect size of Cerebrolysin as compared to Placebo. Cerebrolysin was well tolerated.

doi:10.1016/j.jns.2015.08.336

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WFN15-0297

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**Perception on stroke risk factors and warning symptoms among the stroke survivors and recurrence**

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**Background:** Poor perception on stroke risk factors, warning symptoms, lack of continuity of secondary preventive measures is important etiological factors for recurrence of stroke.

**Objective:** The study aimed to search the inter-relationship between perception of stroke among stroke survivors and related recurrence.

**Patients and methods:** 1540 stroke survivors [M = 900, 59 ± 2 years; F = 640, 58 ± 2 years; ischemic 882 (57.27%); hemorrhagic 658